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EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/975,168	WEAVER ET AL.
	Examiner	**Art Unit**
	Nathan Curs	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. (US Patent No. 5717795) in view of Kartalopoulos ("Introduction to DWDM Technology: Data In A Rainbow"; S.V. Kartalopoulos; IEEE Press, 2000; pages 41 and 42).

Regarding claim 1, Sharma et al. disclose a closed-loop optical network system (fig. 15 and col. 8, line 59 to col. 9, line 56) comprising: a network bus for transmitting a plurality of optical signals (fig. 15, element B1); a multiplexer capable of wavelength division multiplexing a plurality of input optical signals for transmission via the network bus, wherein the plurality of input optical signals have a plurality of predetermined optical wavelengths (fig. 15, elements A17 and lambdas 1-n and 1'-n'); a plurality of remote devices optically connected to the network bus, wherein said plurality of remote devices are capable of reading optical signals having respective predefined optical wavelengths off of the network bus (fig. 15, elements C1-Cn), and wherein said plurality of remote devices are further capable of writing optical signals having respective predefined optical wavelengths onto the network bus (col. 8, line 63 to col. 9, line 11); and a demultiplexer capable of receiving optical signals having at least one of the plurality of predetermined optical wavelengths from the network bus and thereafter wavelength division demultiplexing the optical signals into a plurality of output optical signals (fig. 15, elements A11

and lambdas 1-n). Sharma et al. do not explicitly disclose the fiber type of the fig. 15 embodiment; however Sharma et al. do disclose multi-mode transmission in another embodiment (col. 6, lines 40-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the multi-mode laser source and filter arrangement disclosed by Sharma et al. in the fig. 15 embodiment as well, since a multi-mode laser will be more affordable than a single-mode laser source. Kartalopoulos discloses that multimode fiber has the advantage of being easy to splice and to couple light into (page 42). It would have been obvious to one of ordinary skill in the art at the time of the invention to use multimode fiber in the system of Sharma et al. since it is easy to splice and to couple light into, as taught by Kartalopoulos.

Regarding claim 2, the combination of Sharma et al. and Kartalopoulos discloses a closed-loop optical network system according to claim 1 further comprising a plurality of optical sources capable of generating the plurality of input optical signals from a plurality of input electrical signals (Sharma et al.: fig. 15, elements A16 and A14).

Regarding claim 3, the combination of Sharma et al. and Kartalopoulos discloses a closed-loop optical network system according to claim 2 further comprising a network controller for controlling communications on the network bus, wherein said network controller is capable of transmitting the plurality of input electrical signals to said plurality of optical sources (fig. 15, element A13).

Regarding claim 4, the combination of Sharma et al. and Kartalopoulos discloses a closed-loop optical network system according to claim 1 further comprising a plurality of optical detectors capable of receiving the plurality of output optical signals from said demultiplexer and thereafter generating a plurality of output electrical signals from the plurality of output optical signals (Sharma et al.: fig. 15, elements A12).

Regarding claim 5, the combination of Sharma et al. and Kartalopoulos discloses a closed-loop optical network system according to claim 4, wherein said plurality of optical detectors are capable of transmitting the plurality of output electrical signals to a network controller (Sharma et al.: fig. 15, elements A12 and A13).

Regarding claim 6, the combination of Sharma et al. and Kartalopoulos discloses a closed-loop optical network system according to claim 1, wherein said plurality of remote devices read and write optical signals having respective predefined optical wavelengths that are at least subsets of the plurality of predetermined optical wavelengths of the optical input signals (Sharma et al.: fig. 15, lambdas 1-n and 1'-n' and col. 8, line 63 to col. 9, line 11).

Regarding claim 7, Sharma et al. disclose a node for transmitting input optical signals to and receiving output optical signals from a plurality of remote devices via a fiber network bus in a closed-loop optical network system (fig. 15, element A1 and col. 8, line 59 to col. 9, line 56), said node comprising: a plurality of optical sources capable of generating the plurality of input optical signals from a plurality of input electrical signals (fig. 15, elements A16 and A14); a multiplexer capable of wavelength division multiplexing a plurality of input optical signals for transmission via the network bus, wherein the plurality of input optical signals have a plurality of predetermined optical wavelengths that are selectively received by respective remote devices (fig. 15, elements A17 and A15); and a demultiplexer capable of receiving optical signals having at least one of the plurality of predetermined optical wavelengths from the network bus and thereafter wavelength division demultiplexing the optical signals into a plurality of output optical signals (fig. 15, element A11). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the multi-mode laser source and bus fiber as described above for claim 1.

Regarding claim 8, the combination of Sharma et al. and Kartalopoulos discloses a node according to claim 7, wherein said plurality of optical sources are capable of communicating with a network controller, wherein the network controller is capable of transmitting the plurality of input electrical signals to said plurality of optical sources (Sharma et al.: fig. 15, element A13).

Regarding claim 9, the combination of Sharma et al. and Kartalopoulos discloses a node according to claim 7 further comprising a plurality of optical detectors capable of receiving the plurality of output optical signals from said demultiplexer and thereafter generating a plurality of output electrical signals from the plurality of output optical signals (Sharma et al.: fig. 15, elements A12).

Regarding claim 10, the combination of Sharma et al. and Kartalopoulos discloses a node according to claim 9, wherein the plurality of optical detectors of said receiving element are capable of transmitting the plurality of output electrical signals to a network controller (Sharma et al.: fig. 15, elements A12 and A13).

Regarding claim 11, the combination of Sharma et al. and Kartalopoulos discloses a node according to claim 7, wherein plurality of remote devices read and write optical signals having predefined optical wavelengths that are associated with the plurality of predetermined optical wavelengths of the optical input signals (Sharma et al.: fig. 15, elements C1-Cn).

Regarding claim 12, Sharma et al. disclose a method of transmitting a plurality of optical signals over a network bus in a closed-loop network system (fig. 15, element A1 and col. 8, line 59 to col. 9, line 56), said method comprising the steps of: transmitting a plurality of input optical signals via the network bus, wherein transmitting comprises wavelength division multiplexing the plurality of input optical signals for transmission via the network bus such that the plurality of input optical signals have a plurality of predetermined optical wavelengths (fig. 15, elements A16, A14, A15 and A17); communicating with a plurality of remote devices optically connected

to the network bus, wherein said communicating comprises reading optical signals having respective predefined optical wavelengths off of the network bus (fig. 15, elements C1-Cn); and receiving optical signals having at least one of the plurality of predetermined optical wavelengths from the network bus and thereafter wavelength division demultiplexing the optical signals into a plurality of output optical signals (fig. 15, elements A11 and A12). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the multi-mode laser source and bus fiber as described above for claim 1.

Regarding claim 13, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 12, wherein communicating further comprises writing optical signals having respective predefined optical wavelengths onto the network bus (Sharma et al.: fig. 15, elements lambda 1-n and 1'-n').

Regarding claim 14, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 13, wherein writing optical signals comprises writing optical signals having respective predefined optical wavelengths that are at least a subset of the plurality of predetermined optical wavelengths of the optical input signals (Sharma et al.: fig. 15, elements C1-Cn).

Regarding claim 15, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 12 further comprising generating the plurality of input optical signals from a plurality of input electrical signals, wherein said generating occurs before transmitting the plurality of input optical signals (Sharma et al.: fig. 15, elements A16 and A14).

Regarding claim 16, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 15 further comprising producing the plurality of input electrical signals before generating the plurality of input optical signals (Sharma et al.: fig. 15, element A13).

Regarding claim 17, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 12, wherein receiving further comprises generating a plurality of output electrical signals from the plurality of output optical signals after wavelength division demultiplexing the composite optical signal (Sharma et al.: fig. 15, elements A12).

Regarding claim 18, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 17, wherein generating the plurality of output electrical signals further comprises transmitting the plurality of output optical signals to a network controller after generating the output electrical signals (Sharma et al.: fig. 15, elements A12 and A13).

Regarding claim 19, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 12, wherein communicating comprises reading optical signals having a plurality of predefined optical wavelengths that are at least a subset of the plurality of predetermined optical wavelengths of the optical input signals (Sharma et al.: fig. 15, elements C1-Cn).

Regarding claim 20, the combination of Sharma et al. and Kartalopoulos discloses a method according to claim 12, wherein receiving the optical signals comprises receiving the optical signals after transmission about a closed loop on the network bus from a transmitter to a receiver (Sharma et al.: fig. 15).

3. Claims 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. (US Patent No. 5717795) in view of Kartalopoulos ("Introduction to DWDM Technology: Data In A Rainbow"; S.V. Kartalopoulos; IEEE Press, 2000; pages 41 and 42), and further in view of Polczynski (US Patent No. 4089584).

Regarding claim 21, Sharma et al. disclose an optical communications network (fig. 15 and col. 8, line 59 to col. 9, line 56) comprising: a closed-looped optical network system comprising: a fiber network bus for transmitting a plurality of optical signals (fig. 15, element B1);

a multiplexer capable of wavelength division multiplexing a plurality of input optical signals for transmission via the network bus, wherein the plurality of input optical signals have a plurality of predetermined optical wavelengths (fig. 15, elements A14-A17); a plurality of remote devices optically connected to the network bus, wherein said plurality of remote devices are capable of reading optical signals having respective predefined optical wavelengths off of the network bus, and wherein said plurality of remote devices are further capable of writing optical signals having respective predefined optical wavelengths onto the network bus (fig. 15, elements C1-Cn); and a demultiplexer capable of receiving optical signals having at least one of the plurality of predetermined optical wavelengths from the network bus and thereafter wavelength division demultiplexing the optical signals into a plurality of output optical signals (fig. 15, element A11). Sharma et al. do not explicitly disclose the fiber type of the fig. 15 embodiment; however Sharma et al. do disclose multi-mode transmission in another embodiment (col. 6, lines 40-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the multi-mode laser source and filter arrangement disclosed by Sharma et al. in the fig. 15 embodiment as well, since a multi-mode laser will be more affordable than a single-mode laser source. Kartalopoulos discloses that multimode fiber has the advantage of being easy to splice and to couple light into (page 42). It would have been obvious to one of ordinary skill in the art at the time of the invention to use multimode fiber in the system of Sharma et al. since it is easy to splice and to couple light into, as taught by Kartalopoulos. Sharma et al. do not disclose the network used for communications among different nodes within a vehicle, with the fiber and nodes disposed at least partially throughout said vehicle body. However, Polczynski disclose a closed-loop, multi-mode, plural node optical communication network used within vehicles (col. 1, lines 21-24; col. 3, lines 3-6; col. 4, lines 38-43), where inherently the network is disposed at least partially throughout the vehicle. Considering that it would have been obvious to one of

ordinary skill in the art at the time of the invention that the components of the Sharma et al. optical network come in very small component sizes, it would have been further obvious to one of ordinary skill in the art at the time of the invention to use the network of Sharma et al. as an optical network within a vehicle, as taught by Polczynski, in order to provide the benefits immunity to electromagnetic interference and no need for radiation shielding for the vehicle, as disclosed by Polczynski (col. 1, lines 9-24).

Regarding claim 22, the combination of Sharma et al., Kartalopoulos and Polczynski discloses a vehicle according to claim 21, wherein said closed-loop optical network system further comprises a plurality of optical sources capable of generating the plurality of input optical signals from a plurality of input electrical signals (Sharma et al.: fig. 15, elements A14 and A16).

Regarding claim 23, the combination of Sharma et al., Kartalopoulos and Polczynski discloses a vehicle according to claim 22, wherein said closed-loop optical network system further comprises a network controller for at least partially controlling communications on the network bus within said vehicle body, wherein said network controller is capable of transmitting the plurality of input electrical signals to said plurality of optical sources (Sharma et al.: fig. 15, element 13).

Regarding claim 24, the combination of Sharma et al., Kartalopoulos and Polczynski discloses a vehicle according to claim 21, wherein said closed-loop optical network system further comprises a plurality of optical detectors capable of receiving the plurality of output optical signals from said demultiplexer and thereafter generating a plurality of output electrical signals from the plurality of output optical signals (Sharma et al.: fig. 15, elements A12).

Regarding claim 25, the combination of Sharma et al., Kartalopoulos and Polczynski discloses a vehicle according to claim 24, wherein the plurality of optical detectors of said

closed-loop optical network system are capable of transmitting the plurality of output electrical signals to a network controller (Sharma et al.: fig. 15, elements A12 and A13).

Regarding claim 26, the combination of Sharma et al., Kartalopoulos and Polczynski discloses a vehicle according to claim 21, wherein the plurality of remote devices of said closed-loop optical network system read and write optical signals having respective predefined optical wavelengths that are at least subsets of the plurality of predetermined optical wavelengths of the optical input signals (Sharma et al.: fig. 15, elements C1-Cn).

Response to Arguments

4. Applicant's arguments filed 21 October 2005 have been fully considered but they are not persuasive.

Regarding claims 1-20, the applicant argues that Sharma discloses multiple "longitudinal" modes and that in contrast the bus of claim 1 operates in multiple "transverse" modes. However, the multi-mode laser of Sharma inherently outputs light with both longitudinal and transverse modes. It would have been obvious to one of ordinary skill in the art at the time of the invention that the multi-mode laser of Sharma could possibly be used with multi-mode fiber, although Sharma does not disclose the fiber type. Kartalopoulos provides the motivation for using multi-mode fiber.

The applicant argues that Sharma discloses circulators in fig. 8 and that circulators are primarily used with single mode waveguides so therefore Sharma does not suggest using, and teaches away from using, multi-mode fiber. However, the circulators of Sharma et al. fig. 8, as cited by the applicant in the argument, are not applicable to the fig. 15 embodiment of Sharma et al. In addition, if circulators are conventionally used in single mode fiber systems, and Sharma discloses one embodiment with circulators, this only means at least one embodiment of

Sharma is likely compatible with single mode fiber even though Sharma does not disclose fiber types. If Sharma is likely compatible with single mode fiber in at least one embodiment, that does not mean Sharma is incompatible with multi-mode fiber in any embodiment.

The applicant further argues that the use of multi-mode fibers in telecommunications is contrary to accepted wisdom in the art. However, Kartalopoulos clearly contradicts the applicant's argument by disclosing multi-mode fiber for optical transmission up to 100 Mbps for lengths up to 40km. This is evidence of use of multi-mode fiber in telecommunications.

Regarding claims 21-26, the applicant argues that Polczynski and Sharma already benefit from immunity to EMI since they are optical systems; therefore there would be no motivation to modify either system to achieve EMI immunity. First, to clarify, the rejection of claim 21 is not based on modifying Polczynski in view of Sharma, but rather modifying the combination of Sharma and Kartalopoulos in view of Polczynski. Second, the motivation to modify **is not** to use optical transmission **to achieve EMI immunity**, but rather the motivation to modify is to adapt the network **for use in a vehicle**, because of its EMI immunity, based on the suggestion of Polczynski.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

6. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. R. Sedighian
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PRIMARY EXAMINER